Space Weather Forecast

Issued on Wednesday, 27 October 2021 at 01:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Increased daily chance of Moderate-class X-ray flares, and Minor/Moderate Radio Blackouts (R1/R2) on the sunlit side of Earth.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was moderate in the 24-hour period, with two Moderate class flares observed. These flares emanated from a new region lying on the northeastern solar horizon, AR28921, which has also likely to have been the source for several far-sided Coronal Mass Ejections (CMEs) and associated flares in the past week, as observed in satellite imagery.
This new region is one of up to six on the current facing side of the sun, with these otherwise all appearing in the southern solar hemisphere, straddling 20 South.
While there are numerous 'filaments' on the sun (arcs of plasma - a possible source of CMEs should they lift off) and there continue to be several non-Earth directed CMEs, there is no evidence of Earth-bound CMEs in available imagery at present.

Solar Wind / Geomagnetic Activity: The solar wind speed remained at background levels throughout. The magnetic field associated with the particles comprising the solar wind was weak.
The result of the above solar wind measures was quiet geomagnetic activity throughout, well below G1 Minor Storm.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: There is an increased daily chance (40%) of further Moderate-class flares, the result of the complexity of one of the long-term resident southern solar hemisphere sunspots, and now new region AR2891 lying on the northeastern horizon. Common-class flares are expected (90%).

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs feature in this forecast period. Some weak coronal hole enhancements are possible through the period but the chances of Minor Storm G1 are considered to be no higher than 1% throughout.

Energetic Particles / Solar Radiation: No solar radiation storms are currently expected.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	40	40
Very Active	R3 to R5 X	No	2	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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